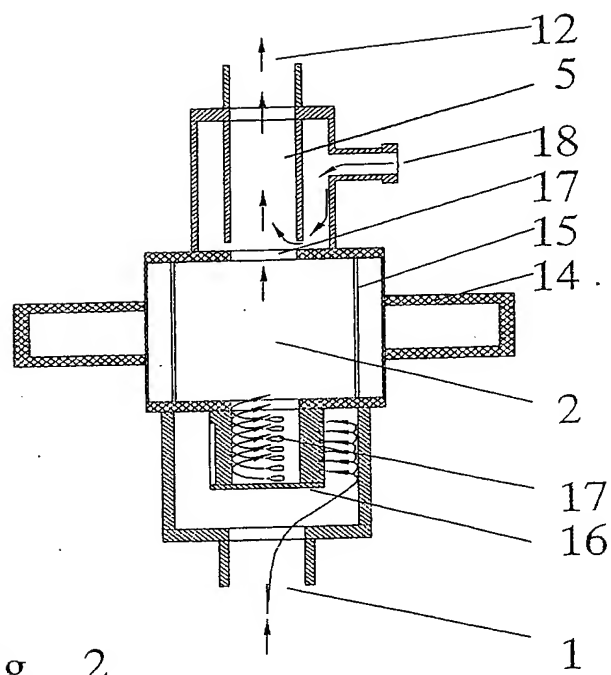


Fig. 1



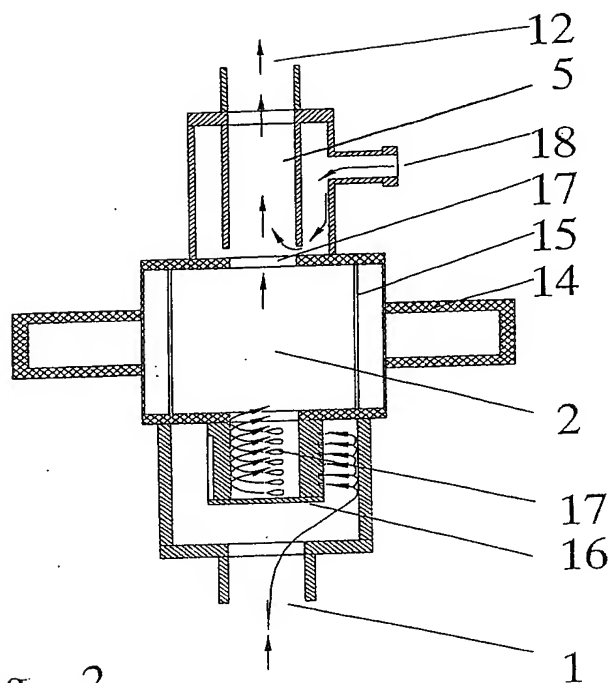


Fig. 2

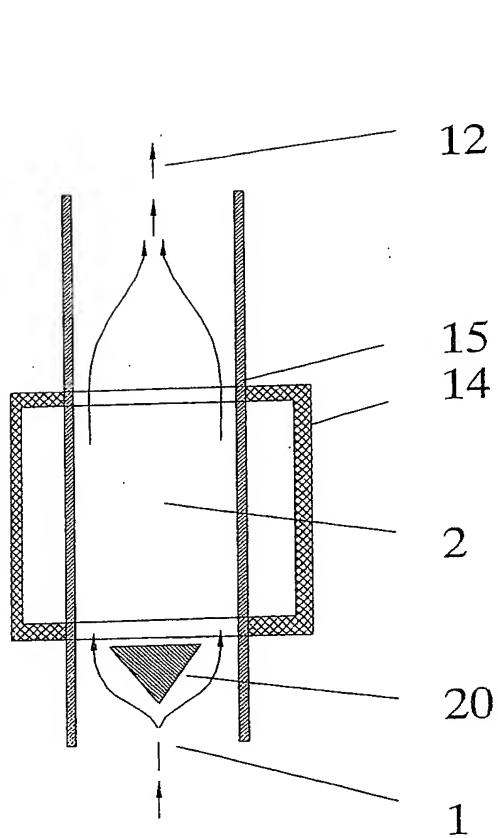


Fig. 3

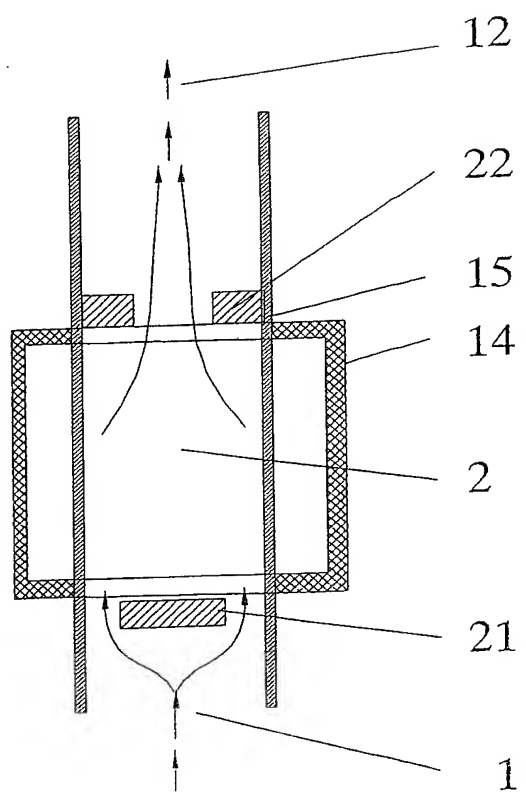


Fig. 4

Figure 5

Production of synthesis gas without addition of hydrogen				
$\text{CO}_2 + \text{CH}_4 \rightarrow 2 \text{CO} + 2 \text{H}_2$			Ar/CO ₂ /CH ₄ = 68/18/13 %	
P = 4500 W		V = 40 l/min		No catalyst
Conversion			Yield	
CO ₂	CH ₄	H ₂	CO	H ₂
0.91	0.99	-	0.83	0.93

Production of synthesis gas with addition of hydrogen				
$\text{CO}_2 + \text{CH}_4 \rightarrow 2 \text{CO} + 2 \text{H}_2$			Ar/CO ₂ /CH ₄ /H ₂ = 70/15/11/4 %	
P = 5000 W		V = 40 l/min		No catalyst
Conversion			Yield	
CO ₂	CH ₄	H ₂	CO	H ₂
0.95	0.99	0.10	0.96	0.95

Production of acetylene				
$\text{CO}_2 + \text{C}_2\text{H}_4 \rightarrow \text{C}_2\text{H}_2 + \text{CO} + \text{H}_2\text{O}$			Ar/CO ₂ /C ₂ H ₄ = 73/21/6 %	
P = 3500 W		V = 38.5 l/min		No catalyst
Conversion			Yield	
CO ₂	C ₂ H ₄	H ₂	CO	C ₂ H ₂
0.21	0.55	-	0.17	0.07

Production of benzene on copper catalysts				
$2 \text{CO}_2 + 2 \text{C}_2\text{H}_4 + 3 \text{H}_2 \rightarrow \text{C}_6\text{H}_6 + 4 \text{H}_2\text{O}$			Ar/CO ₂ /C ₂ H ₄ /H ₂ = 66/19/9/6 %	
P = 4500 W		V = 42.5 l/min		Copper catalyst
Conversion			Yield	
CO ₂	C ₂ H ₄	H ₂	CO	C ₆ H ₆
0.37	0.23	0.65	0.25	0.02